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# POULTRY

## Q&A

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### Biology/Behavior/Anatomy

**Q:** Why do chickens bob their heads back and forth?

**A:** Chicken's eyes are located on the sides of the head, not facing the front like our eyes. This allows the chicken to see much more of the world at one time than we can see. They can almost see behind themselves. This helps them see predators and alerts them to danger. But their forward vision is incomplete; they have a blind spot in front of them. They also can't see an object with both eyes at once. They have trouble getting a three-dimensional view of objects so they reposition their heads to get the 3-D picture. That is why they bob their heads.

**Q:** At what age do chickens begin to lay eggs?

**A:** If all necessary conditions (day length, nutrition, etc.) are met, chickens should begin egg production at about 20 weeks of age.

**Q:** What is the average life span of a chicken?

**A:** Many commercial laying hens are kept for up to 3 years. There are undocumented accounts of "yard chickens" living for more than 10 years.

**Q:** From where do chickens originate?

**A:** Chickens were domesticated from jungle fowl in Southeast Asia many centuries ago.

**Q:** What is the scientific name for chickens?

**A:** The scientific name of the domestic chicken is *Gallus domesticus*. The scientific name for its predecessor, the jungle fowl, is *Gallus gallus*.

**Q:** How can you tell the sex of baby chicks?

**A:** Sexing most chickens is difficult. In some lines there are genetic differences in color between the sexes. In some lines there are differences in feathers, with the primary feathers of the male being shorter than those of the female. But these genetic differences are rare and in most lines of chickens sex can not be determined in this manner.

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Most chicks are sexed by examining the complex folding of the vent area (which

roughly corresponds to the anal area). This method is extremely difficult and it takes lots of time and practice to acquire this skill.

**Q:** How can baby chicks survive without a mother hen?

**A:** Newly hatched chicks have certain inborn behaviors. They are curious and they peck and scratch. In this way, newly hatched chicks learn what to eat.

**Q:** Why do hens stop laying eggs?

**A:** Healthy hens stop laying for either of two reasons:

- 1) They have been in production for a while and are entering a molt; or
- 2) They are not stimulated appropriately by light. Hens lay when they receive the required hours of light (day length) each day.

**Q:** How do chickens reproduce?

**A:** The male mounts the hen from behind and stands on her back. The penis transfers semen into the cloaca of the hen. The cloaca is a common receptacle for the intestinal tract, the reproductive system and the urinary system. Spermatozoa are stored in accessory sex organs in the female. There, the spermatozoa are nourished and released over several weeks. So, the rooster does not have to mate with the hen each time she is to lay an egg to produce fertile eggs. Hens remain highly fertile for about 10 days to 2 weeks after mating. Then they need to mate again to increase the fertility of the eggs laid.

Hens ovulate about every 24 to 26 hours. The egg yolk has a germ cell on its surface. The spermatozoa fertilize this germ cell. Then the albumen, or white of the egg, is secreted around the yolk by the reproductive tract. Finally, the shell membranes and the shell are secreted and deposited as the egg travels down the reproductive tract. The egg is laid through the cloaca. This is the way fertile eggs are laid by the hen. The hen would still lay eggs if a rooster were not around, but the eggs would not be fertile.

**Q:** In random chicken matings, what percent of eggs produced result in male offspring?

**A:** The sex ratio in chickens is 50:50.

**Q:** Are poultry comfortable in a modern poultry barn?

**A:** Yes, modern poultry facilities provide optimum conditions for birds to grow. Temperature, humidity, lighting, ventilation, ammonia concentration, litter condition, feed rations and water quality are constantly monitored to provide the birds with a healthy environment. Chickens reared in a poor environment are not productive, so growers have an economic incentive to raise their animals in a comfortable setting.

**Q:** Do domesticated chickens and turkeys prefer to live outdoors?

**A:** A properly maintained poultry barn is a comfortable environment for birds where they are protected from predators and have a readily available food supply. When doors to poultry barns have been left open accidentally, only a few birds have actually left the safety of the poultry facility.

**Q:** Would domesticated poultry be better off if released in the wild?

**A:** No, the natural world is a cruel and inhospitable environment. Feral poultry would immediately face temperature extremes, predators, disease and starvation. Experts estimate that more than 60 percent of Bobwhite Quail die each year because of these natural factors. Today's poultry industry raises birds according to strict animal welfare guidelines, with the aim of providing a humane environment.

**Q:** Are U.S. poultry producers responsible for causing avian influenza?

**A:** No. U.S. poultry producers constantly monitor their birds for diseases and have preparedness plans and biosecurity procedures in place to prevent disease. Commercial poultry in the U.S. have the best possible veterinary care. Also, poultry in modern rearing facilities are isolated from migratory birds, which may transmit avian influenza.

## Incubation/Embryology

**Q:** Which part of the egg develops into a baby chicken, the yolk or the white?

**A:** Neither. In a fertilized egg there is a group of cells on the surface of the yolk in an area called the germinal disc. By the time the egg is laid by the hen, there are several hundred thousand cells in this disc. These cells develop into the embryo, which eventually surrounds the yolk and uses it for food.

**Q:** Should fertile eggs with dirty shells be incubated?

**A:** Dirt on an egg can restrict oxygen and gas exchange in the egg. A very fine sand paper can be used to remove soiled areas. The main problem is that the soiled area can cause bacterial infection. It is best to incubate only clean eggs.

**Q:** Does incubation temperature influence the sex of hatching eggs?

**A:** Incubation temperature has nothing to do with determining the sex of the bird. Altering the incubation temperature will only reduce the number of eggs that hatch and threaten the health of the birds.

**Q:** What is candling eggs and how is it done?

**A:** Egg candling is the process of shining a bright light through the egg to examine its internal contents. One easy way to candle an egg is to use a small, bright flashlight.

**Q:** Will incubation of double-yolked eggs result in “twin chickens”?

**A:** Double-yolked eggs almost never hatch. Even though a double-yolked egg is larger, it cannot support the development of two chicks.

**Q:** What is the purpose of turning eggs during incubation?

**A:** The yolk is less dense than the white, so the yolk floats to the top of the egg. Turning repositions the yolk and white, keeping the yolk and the embryo from pressing against and possibly sticking to the inside of the eggshell.

**Q:** What is the recommended environmental temperature for newly hatched, or brooding, chicks?

**A:** The brooding box should contain a range of temperatures at all times. The area close to heat lamps should be 95 degrees F, but other areas away from the light should be cooler so the chicks can cool themselves if they get too hot. If the chicks huddle together by the light, they are too cold. If they huddle around the edges of the brooder away from the light, they are too hot. The temperature in the brooding box can be decreased 5 degrees each week as the chicks get older.

## Products/Food Safety

**Q:** Are hormones used to produce poultry meat?

**A:** No, hormones are not fed or administered to commercial poultry. The rapid growth rates and feed efficiencies in commercial poultry are the result of traditional genetic selection, good nutrition, and improved animal husbandry practices to maintain the health and productivity of poultry.

**Q:** Are antibiotics indiscriminately used in poultry production?

**A:** No, antibiotic treatment is costly and is used only under the strict supervision of a poultry veterinarian to treat sick birds or to prevent diseases that are likely to occur. When antibiotics are administered, withdrawal periods are strictly adhered to. This ensures that no antibiotic residues remain in the meat we eat. Alternatives to antibiotics are frequently used, including vaccinations and probiotics (such as the beneficial bacteria commonly found in yogurt).

**Q:** Are supermarket poultry injected with artificial additives and artificial flavors?

**A:** Poultry is sometimes injected with salt solutions and chicken broth to improve meat tenderness, taste and shelf life. These are natural solutions that enhance product quality and can reduce bacterial spoilage.

**Q:** Why are some of the processed chickens purchased in stores yellow?

**A:** The yellow color of chicken skin is the result of natural pigments found in corn or other feed ingredients in the diet of chickens.

**Q:** What are “free range” chickens?

**A:** Free range refers to chickens that have access to an environment outside a chicken house or sheltered area.

**Q:** Are “free range” and “organic” poultry more wholesome than conventionally raised poultry?

**A:** All poultry—whether free range, organic or conventionally raised—are fed diets that meet or exceed the National Research Council’s recommendations for Poultry Nutrition. While the feed formulations used by different growers may vary, the actual nutrient content and wholesomeness of all poultry products is comparable.

**Q:** Why do chickens and turkeys have white and dark meat?

**A:** Different muscles do different jobs for the bird. Muscles that are used almost constantly, such as leg and thigh muscles, are dark. Muscles that are used to move quickly for short periods of time, such as the wing muscles, are white. Because they work differently, white and dark muscles have different fuel demands and oxygen usage. The ability to store and use oxygen for energy metabolism determines whether a muscle will appear white or dark.

**Q:** Do eggs from Araucana chickens really have no cholesterol?

**A:** No, they have cholesterol just like all other eggs.

**Q:** Is it safe to eat raw eggs?

**A:** The risk of food poisoning from bacterial contamination is highest with raw eggs. To reduce the risk of food poisoning, people should not consume raw or lightly cooked eggs.

**Q:** How long will table eggs stay fresh?

**A:** Fresh eggs can be stored in a refrigerator (at 40 to 45 degrees F) for 4 to 5 weeks after the packaging date on the carton. Hard-boiled (cooked) eggs should be kept in the refrigerator for no more than 1 week.

**Q:** What are blood spots?

**A:** Although rare in packaged eggs, blood spots can sometimes be found when an egg is cracked. These spots are caused by the rupture of a blood vessel during the formation of the egg. Blood spots are most often found on the outer surface of the yolk. They do not indicate that an egg is fertile. After a period of time a blood spot will dissipate, so if you see a blood spot it means the egg is fresh. Eggs with blood spots are fine to consume. The blood spot can be removed with the tine of a fork or the tip of a knife.

Another imperfection that can be found in an egg is a meat spot. Meat spots are usually found in the albumen (white) of the egg. Meat spots are pieces of the oviduct of the chicken that have become dislodged during the formation of the egg and have been deposited in the albumen. Eggs with meat spots are also safe to consume. The meat spots can be removed with the tine of a fork or the tip of a knife.

**Q:** Is there a difference in the nutritional quality of brown-shelled and white-shelled eggs?

**A:** No, there is no difference. The color of the eggshell is determined by the breed of hen that lays the egg. White egg layers have white feathers and ear lobes, while brown egg layers usually have darker feathers and always have red ear lobes. Hens that lay brown-shelled eggs are usually larger than hens that lay white-shelled eggs, and thus require more food. This is why brown eggs are typically more expensive than white eggs.

**Q:** Are fertile eggs more nutritious than non-fertile eggs?

**A:** No. Most table eggs that are bought at the grocery have no chance to be fertile anyway, because the hens are not housed with roosters.

**Q:** How should I store my eggs at home?

**A:** Even though most refrigerators have a place to store eggs, eggs should be stored in the carton in which they are purchased. This is because eggshells have thousands of tiny pores to allow gases to move in and out of the egg. Eggs not stored in the carton can pick up odors from other items in the refrigerator.

**Q:** Why is there a greenish ring around the yolk of hard-boiled eggs?

**A:** The greenish ring is caused by a combination of iron and sulfur when the egg is cooked too long or not cooled quickly after cooking. Such eggs are safe to eat.

**Q:** What are the stringy pieces of white around the yolk?

**A:** These strands are called chalazae. They are thickened pieces of the albumen (white) that help keep the yolk centered in the egg. They do not indicate fertility and are a natural part of the egg.

**Q:** Why is the albumen (white) sometimes cloudy or greenish or yellowish in color?

**A:** Cloudiness is caused by carbon dioxide in the albumen that has not had time to escape through the pores in the eggshell. There is nothing wrong with these eggs, and the cloudiness indicates that the egg is very fresh. A slight green or yellow color to the albumen of fresh eggs indicates the presence of riboflavin (Vitamin B<sub>2</sub>). These eggs are safe to consume.

**Q:** How long can I keep fresh poultry meat?

**A:** All fresh meats should be cooked or frozen within 1 to 2 days after purchase.

**Q:** How long can I keep frozen poultry meat?

**A:** Frozen poultry meats will retain their quality in the freezer for 3 to 6 months.

**Q:** What do the terms “Fresh,” “Frozen” and “Hard Chilled” mean?

**A:** The term “Fresh” is allowed for poultry that has never had an internal temperature below 26 degrees F. “Hard Chilled” or “Previously Hard Chilled” is used for products whose internal temperature has been below 26 degrees F but not below 0 degrees F. “Frozen” or “Previously Frozen” refers to poultry that has had an internal temperature below 0 degrees F.

**Q:** How is the term “Organic” used on poultry products?

**A:** The term “Organic” cannot be used by itself. However, the U.S. Department of Agriculture does allow the use of the phrase “certified organic by (a certifying entity).”

**Q:** Can avian influenza be transmitted to humans by eating properly cooked poultry?

**A:** No, avian influenza is caused by a heat-sensitive virus that is easily killed by proper cooking (heating to an internal temperature of 180 degrees F). Commercially reared poultry are constantly monitored for avian influenza and infected birds would never enter the food supply.

**Conclusion** – Fifty years ago, poultry was expensive and eaten only on special occasions. Today’s poultry industry is able to produce wholesome, inexpensive products that are a great source of protein. As a result, most people eat poultry quite often. These advances are the result of improved nutrition, better animal husbandry, selective breeding and enhanced disease control. Industry personnel, researchers and government officials are continually monitoring and making improvements in poultry production so that consumers will continue to have high quality products at a low cost.

For more information visit the Extension poultry web site at: <http://gallus.tamu.edu>

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Revision